

Determinants of Information and Communication Technology Integration in Learning of Numeracy Concepts in Lower Primary Schools in Mombasa County, Kenya.

Benard Litali Ashiono

Abstract

This study explored how teachers use ICT in their teaching of numeracy concepts to children in lower grades. The study also examined factors that enhance or hinder teachers' use of ICT in teaching numeracy skills. Literature reviewed revealed that there is generally poor performance in mathematics among pupils. This could be attributed to inadequate development of basic mathematics concepts in the lower grades. Findings from previous studies indicate that ICT has great potential in enhancing the teaching of mathematics. It was envisaged in this study that the findings would provide valuable insights that would help improve the teaching and learning of numeracy concepts through the use of ICT. An exploratory sequential mixed methods research design was employed to conduct the study in which quantitative data was initially collected in the first phase. Qualitative data was then collected in the second phase to explain the quantitative data. The study targeted all the teachers teaching in lower grades in both private and public primary schools in Mombasa County, Kenya. A sample of 40 primary schools was purposively selected based on the availability of ICT tools for instructional purposes. Three teachers teaching in lower grades (Grades 1, 2 & 3) were then selected from each school. In cases where there were more than three teachers teaching in lower grades in a school, simple random sampling technique was employed to select only three. The sample size selected comprised of 25% of all the lower primary schools in the county. Teacher Questionnaire (TQ), Teacher's Interview Protocol (TIP) and Observation Protocol (OP) were used to collect data. Pilot study was conducted in two schools to check and improve these instruments. Validity of the instruments was established through expert reviews and instrument triangulation. Reliability of the instruments was further determined through the use of test-retest technique. The Teacher Questionnaire with a correlation coefficient of $r = .86$ was found to be reliable. The Statistical Package for Social Sciences (SPSS) was utilized to prepare and analyze data and to test significance levels between variables at .05 significance level. Data was analyzed statistically using both descriptive and inferential statistics. One Way ANOVA and Pearson Product Moment Correlation Coefficient techniques were utilized to test the hypotheses. Data was also analyzed qualitatively using descriptive phenomenological analysis in which data transcriptions were categorized into themes and sub-themes related to phenomena under study. The findings of the study revealed that only 17% of teachers used ICT in teaching numeracy concepts. The findings further revealed that only a paltry 4% of the teachers used ICT on a regular basis to teach numeracy concepts. It was therefore concluded that teachers' use of ICT in teaching numeracy concepts in lower primary schools was inadequate. The study findings also revealed that majority of teachers in the schools were inadequately equipped to teach numeracy concepts using ICT.

The study findings further revealed that accessibility to laptops and tablets by teachers and learners in schools resulted in increased use of ICT in teaching numeracy concepts. Finally, teachers' professional development in the use of ICT was found to be a vital ingredient in the effective use of ICT in teaching numeracy concepts. It was recommended that schools should be equipped adequately with ICT resources with a lot of emphasis laid on provision of laptops and tablet for teaching-learning purposes. Additionally, teachers should be given sufficient technical support in their use of ICT in teaching. Finally, it was recommended that teachers should be supported in the course of their professional development in the use of ICT in teaching mathematics.

Key words: Determinants of Information and Communication Technology, Integration in Learning of Numeracy Concepts, Lower Primary Schools , Mombasa County, Kenya

Full text: <https://ir-library.ku.ac.ke/bitstream/handle/123456789/19033/Determinants%20of%20Information%20and%20Communication%20Technology%20Integration.pdf?sequence=1&isAllowed=y>